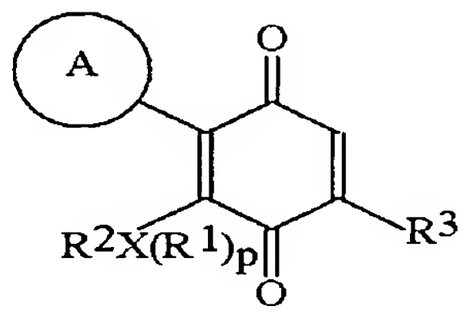
ATTACHMENT A

LISTING OF CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

Claims:

1. (Original) A pharmaceutical composition comprising as active agent a cannabinoic quinone or an enantiomer thereof, wherein said cannabinoic quinone is a compound of the general formula (I):



(I)

wherein,

ring A is 5-, 6-, or 7-membered alicyclic or aromatic ring optionally substituted with from 1 to 3 substituents independently selected from optionally branched C_1-C_5 alkyl, optionally branched C_1-C_5 alkenyl, hydroxy, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino and cyano;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

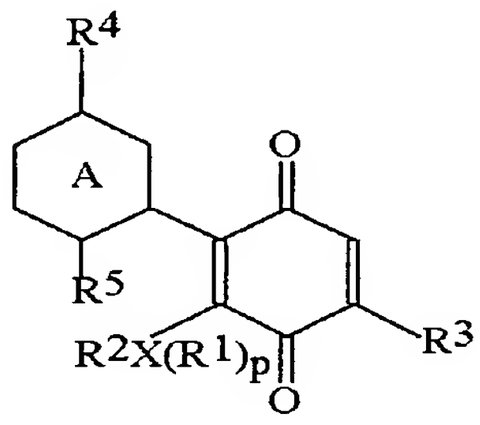
R^1 is H or C_1-C_5 alkyl;

R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

and optionally further comprising at least one pharmaceutically acceptable additive, diluent and/or carrier.

2. (Original) The pharmaceutical composition of claim 1, wherein said cannabinoic quinone is the compound of formula (II):



(II)

wherein

ring A is a cyclohexane, cyclohexene or benzene ring;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

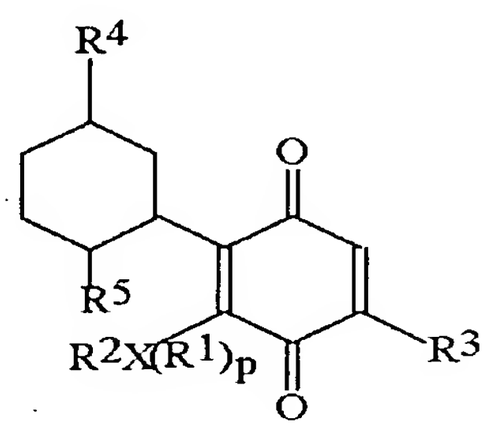
R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

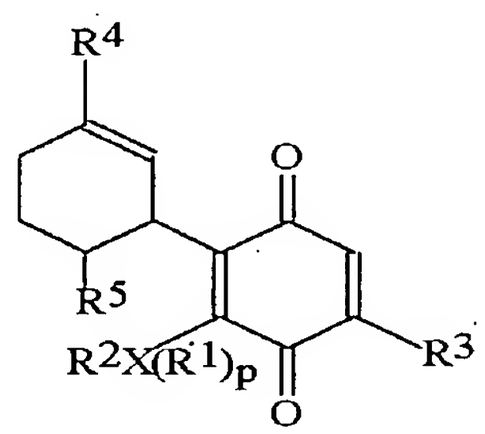
R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano; and

R^5 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, or R^5 is hydrogen when R^2 is alkylene.

3. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~and 2~~, wherein said cannabinoic quinone is a compound of one of formulae (III) or (IV), wherein formulae (III) and (IV) have the structure:



(III)



(IV)

wherein

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

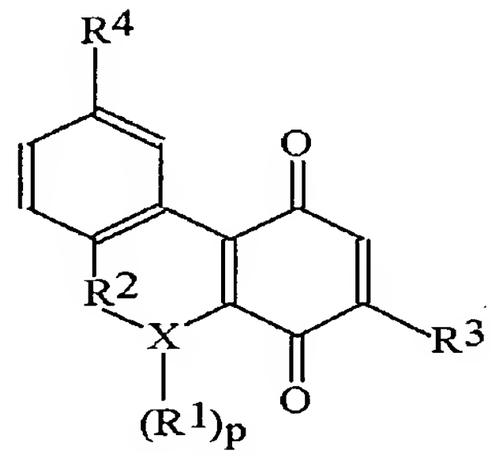
R^2 designates a substituent selected from H and C_1-C_5 alkyl;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano; and

R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano; and

R^5 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl.

4. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~and 2~~, wherein said cannabinoic quinone is a compound of formula (V):



(V)

wherein

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

R^2 designates a methylene group optionally substituted with up to two alkyl groups, wherein R^2 with the substituents comprises up to 5 carbon atoms;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano; and

R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano.

5. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim ~~1 to~~ 3, wherein X is oxygen, R^2 is hydrogen, and R^5 is 2-propyl or 2-propenyl.

6. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim ~~1 to 2 and~~ 4, wherein X is an oxygen atom forming a pyrane ring comprising two carbon atoms of the quinone ring to which said oxygen is attached and carbon atoms 3 and 4 of ring A, which pyrane ring is preferably 2,2-dimethyl substituted.

7. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 4~~, wherein R^4 is methyl.

8. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 2~~, wherein said cannabinoic quinone is the compound 3S,4R-p-benzoquinone-3-hydroxy-2-p-mentha-(1,8)-dien-3-yl-5-pentyl (also designated HU-331).

9. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 2~~, wherein said cannabinoic quinone is the compound 6aR,10aR-1-H-dibenzo[b,d]pyran-1,4-(6H)-dione-6aβ,7,10,10aα-tetrahydro-6,6,9-trimethyl-3-pentyl (also designated HU-336).

10. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 2 and 4~~, wherein said cannabinoic quinone is the compound 1-H-dibenzo[b,d]pyran-1,4(6H)-dione-6,6,9-trimethyl-3-pentyl (also designated HU-345).

11. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 3~~, wherein said cannabinoic quinone is the compound 3S,4R-p-benzoquinone-3-hydroxy-2-[p-mentha-1-en-3-yl]-5-pentyl (also designated HU-395).

12. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 3~~, wherein said cannabinoic quinone is the compound 3S,4R-p-benzoquinone-3-hydroxy-2-[p-menthan-3-yl]-5-pentyl (also designated HU-396).

13. (Currently Amended) The pharmaceutical composition of ~~any one of the preceding claims~~ claim 1, for the treatment of hyperproliferative disorders.

14. (Original) The pharmaceutical composition of claim 13, wherein said hyperproliferative disorder is a malignant or a non-malignant disorder.

15. (Original) The pharmaceutical composition of claim 13, wherein said hyperproliferative disorder is one of carcinoma, lymphoma, melanoma, glioblastoma and sarcoma.

16. (Original) The pharmaceutical composition of claim 14, wherein said non-malignant hyperproliferative disorder is psoriasis.

17. (Currently Amended) The pharmaceutical composition of ~~any one of the preceding claims~~ claim 1, for intra-peritoneal (i.p.), subcutaneous (s.c.) or intratumor administration.

18. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 12~~, for the treatment of a disease or condition selected from inflammation and infections caused by bacteria, protozoa or fungus.

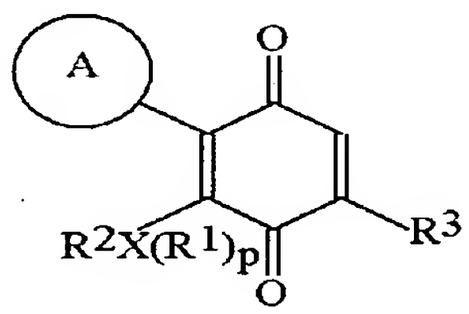
19. (Currently Amended) The pharmaceutical composition of ~~any one of claims~~ claim 1 ~~to 12~~, for the treatment of an autoimmune disease.

20. (Currently Amended) The pharmaceutical composition of ~~any one of the preceding claims~~ claim 1, optionally further comprising pharmaceutically acceptable additives, diluents and carriers.

21. (Original) The pharmaceutical composition of claim 20, wherein said carrier is a 1:1:18 (v/v) mixture of ethanol:Emulphor®:PBS.

22. (Currently Amended) The pharmaceutical composition of ~~any one of the preceding claims~~ claim 1, wherein said active agent comprises an optically active isomer or a racemic mixture of said cannabinoic quinone.

23. (Currently Amended) A method for the treatment of a hyperproliferative disorder, comprising administering to a subject in need of treatment a therapeutically effective amount of a cannabinoic quinone of formula I:



(I)

wherein,

ring A is 5-, 6-, or 7-membered alicyclic or aromatic ring optionally substituted with from 1 to 3 substituents selected independently from optionally branched C_1-C_5 alkyl, optionally branched C_1-C_5 alkenyl, hydroxy, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

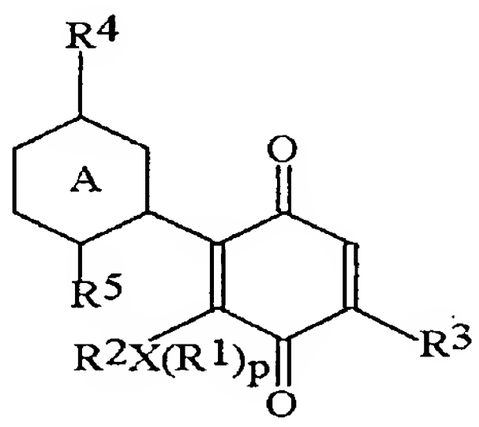
R^1 is H or C_1-C_5 alkyl;

R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A; and

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

or of a pharmaceutical composition as defined in ~~any one of claims~~ claim 1 ~~to 17 and 20 to 22~~.

24. (Original) The method of claim 23, wherein said cannabinoic quinone is a compound of formula (II):



(II)

wherein,

ring A is a cyclohexane, cyclohexene or benzene ring;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;
R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano; and
R^5 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, or R^5 is hydrogen when R^2 is alkylene.

25. (Currently Amended) The method of ~~any one of claims~~ claim 23 ~~24~~, wherein said cannabinoic quinone is any one of HU-331, HU-336, HU-345, HU-395 and HU-396.

26. (Currently Amended) The method of treatment of ~~any one of claims~~ claim 23 ~~to 25~~, wherein said hyperproliferative disorder is a malignant or a non-malignant disorder.

27. (Currently Amended) The method of treatment of ~~any one of claims~~ claim 23 ~~to 25~~, wherein said hyperproliferative disorder is one of carcinoma, lymphoma, melanoma, glioblastoma and sarcoma.

28. (Original) The method of claim 27, wherein said cannabinoic quinone is one of HU-331, HU-395 and HU-396.

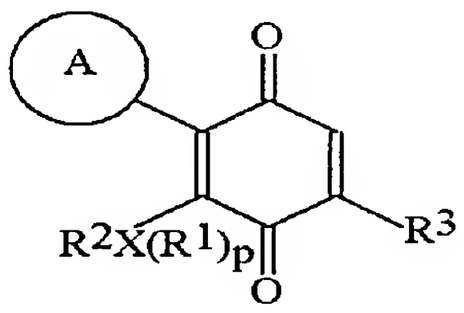
29. (Original) The method of claim 28, wherein said hyperproliferative disorder is one of colon cancer, lymphoma and breast cancer.

30. (Original) The method of claim 27, wherein said cannabinoic quinone is one of HU-336 and HU-345.

31. (Original) The method of claim 30, wherein said hyperproliferative disorder is one of prostate cancer and glioblastoma.

32. (Currently Amended) The method of ~~any one of claims~~ claim 23 ~~to 31~~, wherein said cannabinoic quinone or composition comprising the same is administered via intraperitoneal, subcutaneous or intratumor route.

33. (Currently Amended) A method for the treatment of one of inflammatory, infectious and auto-immune conditions, comprising administering to a subject in need of such treatment a therapeutically effective amount of a cannabinoic quinone of general formula I :



(I)

wherein,

ring A is 5-, 6-, or 7-membered alicyclic or aromatic ring optionally substituted with from 1 to 3 substituents independently selected from optionally branched C_1-C_5 alkyl, optionally branched C_1-C_5 alkenyl, hydroxy, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

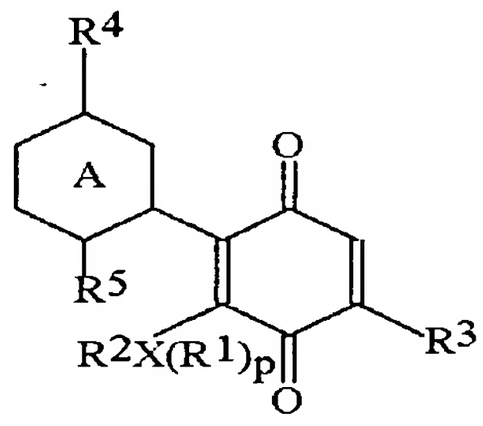
R^1 is H or C_1-C_5 alkyl;

R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A; and

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano; or

of a pharmaceutical composition as defined in ~~any one of claims~~ claim 1 ~~to 12 and 18 to 22~~.

34. (Original) The method of claim 33, wherein said cannabinoic quinone is a compound of formula (II):



(II)

wherein

ring A is a cyclohexane, cyclohexene or benzene ring;

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

R^2 designates a substituent selected from H and C_1-C_5 alkyl, or R^2 designates an optionally branched C_1-C_5 alkylene connected to ring A forming a 6-membered heterocyclic ring comprising atom X, two carbon atoms of the quinone ring to which X is attached and carbon atoms 3 and 4 of ring A;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano;

R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano; and

R^5 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, or R^5 is hydrogen when R^2 is alkylene.

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Canceled)

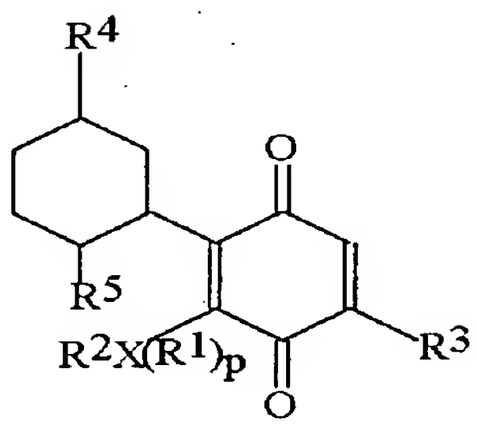
42. (Canceled)

43. (Canceled)

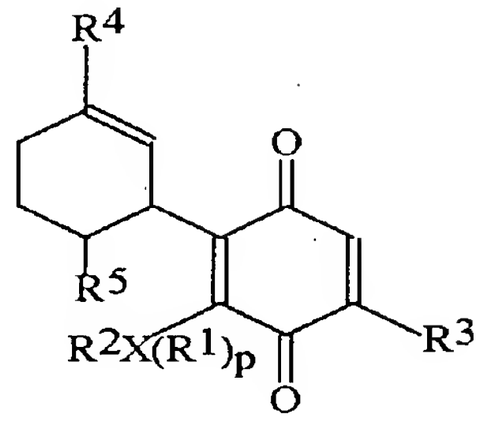
44. (Canceled)

45. (Canceled)

46. (Original) A compound of formula (III) or (IV):



(III)



(IV)

wherein

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

R^1 is H or C_1-C_5 alkyl;

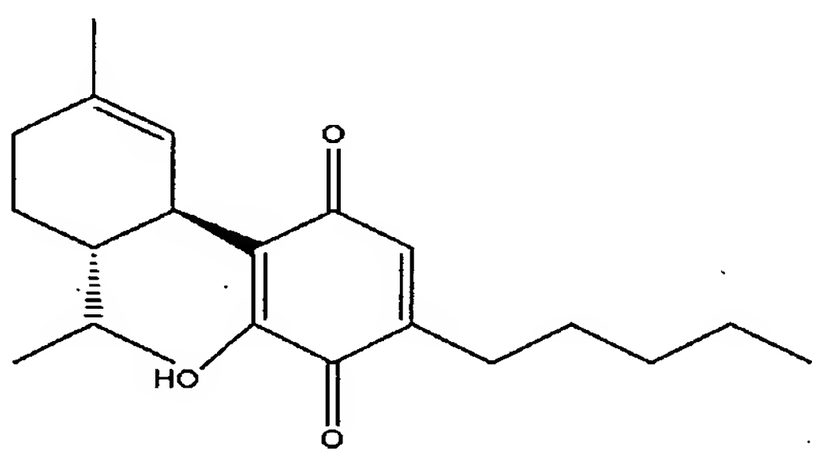
R^2 designates a substituent selected from H and C_1-C_5 alkyl;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano; and

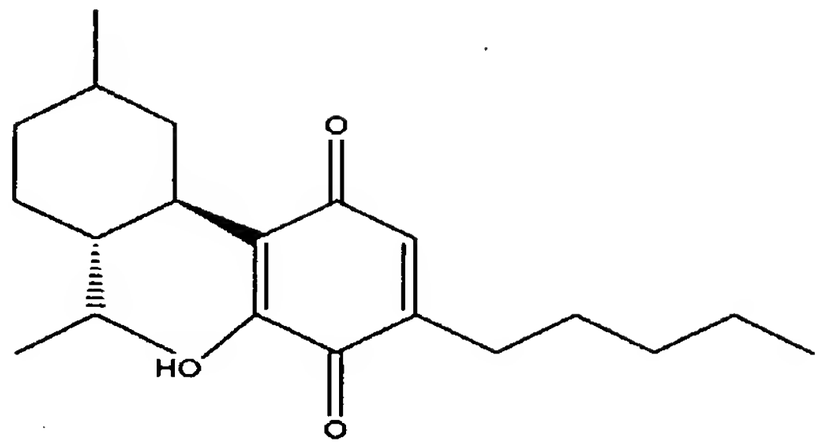
R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano; and

R^5 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl.

47. (Original) The compound of claim 46, wherein said compound has one of the formulae:

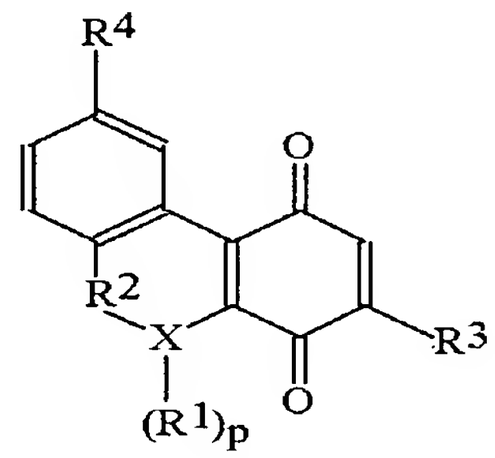


designated HU-395; or



designated HU-396.

48. (Original) A compound of formula (V):



(V)

wherein

X is an oxygen, nitrogen or sulfur atom;

p is zero when X is oxygen or sulfur, or p is 1 when X is nitrogen;

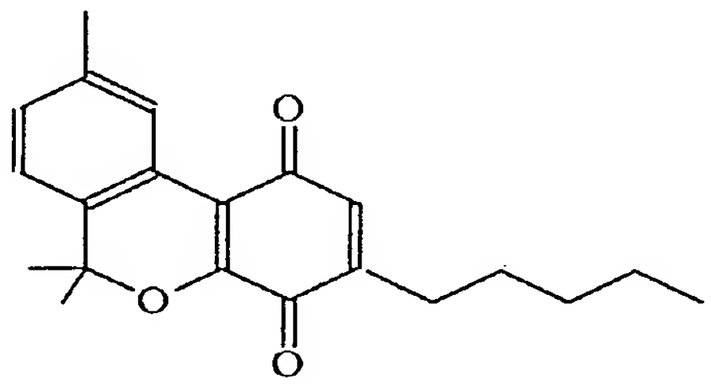
R^1 is H or C_1-C_5 alkyl;

R^2 designates a methylene group optionally substituted with up to two alkyl groups, wherein R^2 with the substituents comprises up to 5 carbon atoms;

R^3 is optionally branched C_1-C_{10} alkyl or optionally branched C_1-C_{10} alkenyl, wherein said alkyl or alkenyl are optionally substituted with hydroxyl, alkoxy, halo (fluoro, chloro, bromo, iodo), thio, amino or cyano; and

R^4 is optionally branched C_1-C_5 alkyl or optionally branched C_1-C_5 alkenyl, optionally substituted with hydroxyl, halo (fluoro, chloro, bromo, iodo) thio, amino and cyano.

49. (Original) The compound of claim 48, wherein said compound has the formula:



and is designated HU-345.

50. (Currently Amended) The optically active isomer and the racemic mixture of ~~each of the compounds~~ the compound defined in ~~claims 46-49~~ claim 46.

51. (New) The optically active isomer and the racemic mixture of the compound defined in claim 48.

52. (New) The optically active isomer and the racemic mixture of the compound defined in claim 49.